CHAUVIN® ARNOUX
CHAUVIN ARNOUX GROUP

C.A 6470N
TERCA3
C.A 6471

New earth and resistivity testers: comprehensive, accurate and suitable for all-terrain use

Earth and resistivity testers

C.A 6470N TERCA 3

INDUSTRY & HOUSING

4 in 1 : *Earth • Resistivity • Coupling • Continuity*

C.A 6471

INDUSTRY

5 in 1 : *Earth • Selective earth • Resistivity • Coupling • Continuity*

Measurement of earth networks in parallel without disconnecting the earth and without rods.

- Possibility of selecting the measurement frequency
- Automatic calculation of resistivity and coupling

C.A 6470N TERCA 3 & C.A 6471

– **Multi-function testers**
  - *3-pole and 4-pole measurements*
  - *Selective 4-pole measurements, 2 clamps (C.A 6471 only)*
  - *Resistivity (Wenner + Schlumberger methods),*
  - *Earth coupling,*
  - *Continuity & resistance*

– **Measurements possible even with highly resistive soils**

– **Improved measurement quality due to high rejection of disturbance voltages**

– **Excellent accuracy and resolution**

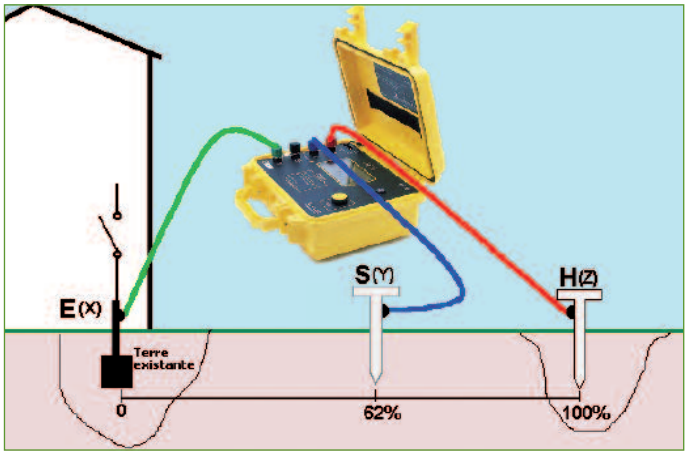
– **Standard software for data recovery and processing of the results**

Giant backlit LCD screen
Colour-coded connection terminals to prevent errors
Connection diagrams for the different measurements
Direct access to the measurements by means of a switch
Rugged leak-proof and site-proof box
Direct access to configuration, recording, etc.
C.A 6471

EARTH MEASUREMENTS

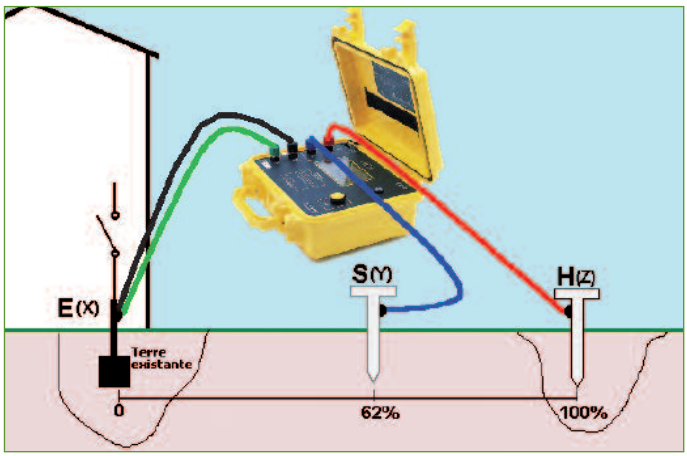
EARTH MEASUREMENT WITH 3P METHOD

The 3P method is the traditional method using rods to measure the resistance of an existing earth connection. The C.A 6470N & C.A 6471 can also be used to measure the resistances of the auxiliary rods RS and RH, as well as any disturbance voltages.
Suitable for all types of measurement environments, even the most difficult, this method guarantees measurement of auxiliary-rod resistances up to 100 kΩ and disturbance voltages of 60 Vpeak.



4P AND SELECTIVE 4P EARTH MEASUREMENT

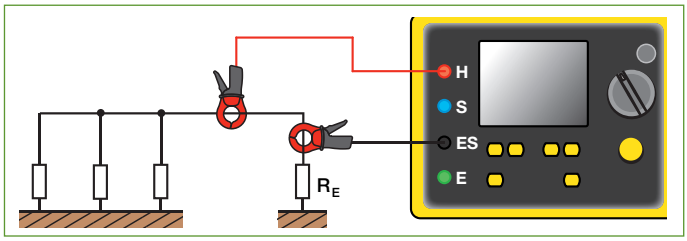
The 4P measurement method is particularly suitable for measuring very low earth resistances.
If there are several resistances connected in parallel, it is possible to use the instrument with a clamp-on ammeter to carry out **selective measurements,** in order to avoid the effect of the parallel earth connections. **This "selective 4P" measurement method saves considerable time because it is no longer necessary to disconnect the earth resistance before measuring it.**



The 4P measurement method is more accurate and can be used to measure low earth resistances. The results obtained with this measurement method are ideal for the requirements of energy distributors such as EDF.

EARTH LOOP MEASUREMENT WITH 2 CLAMPS

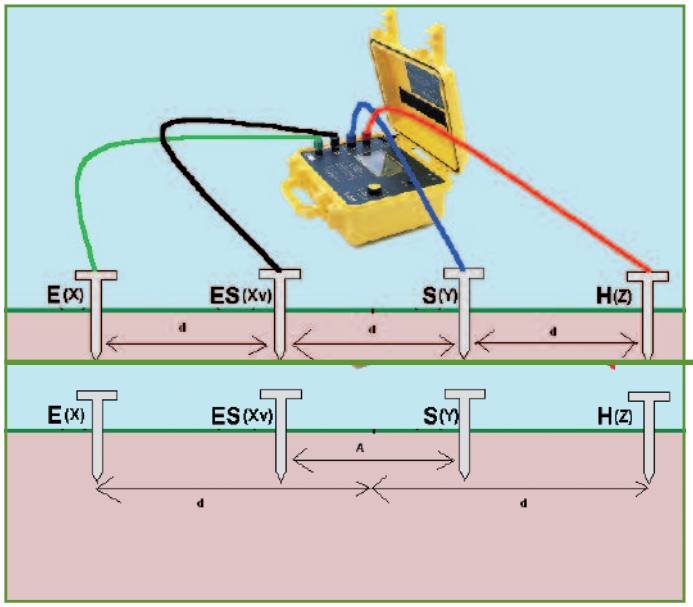
In the event of a system with parallel earth connections, 2 clamp-on ammeters can be used with the C.A 6470N & C.A 6471 to provide accurate earth resistance measurements.
The principle of this method involves placing 2 clamps around the earth conductor tested and connecting each of them to the instrument. One clamp injects a known signal (32 V / 1367 Hz) while the other clamp measures the current flowing in the loop.
This method **saves considerable time** when earth testing because it is no longer necessary to set up auxiliary rods or disconnect the earth connections, which is often time-consuming



MEASUREMENT OF EARTH COUPLING

To estimate the reciprocal influence of 2 normally unrelated earth resistances, you must calculate the coupling coefficient, which should be as low as possible.
The operator takes 3 successive measurements (2 classic earth measurements using the classic 3P - R1 & R2 method, and 1 earth measurement using the 2P – R1-2 method. The instrument then **automatically** calculates the coupling resistance: Rc = (R1 +R2 –R1-2) / 2.

SOIL RESISTIVITY MEASUREMENT



Wenner method:
the distances between the 4 rods are identical: (d)
?W=2. ?.d.RS-SE

Schlumberger method::
the distance between the 2 central rods S & ES is A
the distance between the 2 outer rods E & H is 2d
?S = (?.(d2-A2/4).RS-SE) /4

When it is possible to choose the position of the earth connection, resistivity measurements can be used to check the soil and determine where the earth resistance will be lowest (optimization of building costs).

The C.A 6472 **automatically** calculates soil resistivity using the Wenner or Schlumberger methods as soon as the distances between the rods have been entered.

The resistances of the rods RE, RES, RS and RH can also be measured.

Reminder: soil resistivity (?) calculation methods

		C.A 6470N	C.A 6471
3P method	Range	0.01 Ω to 99.9 kΩ	
	Resolution	0.01 to 100 Ω	
	Measurement frequency	41 to 512 Hz	
	Coupling measurement	yes	
4P method	Range	0.001 to 99.99 kΩ	
	Resolution	0.001 to 10 Ω	
	Selective 4P	–	yes
Earth measurement with 2 clamps	Range	–	0.01 to 500 Ω
	Resolution	–	0.01 to 1 Ω
	Measurement frequency	–	Auto: 1,367 Hz Manual: 128 Hz, 1,367 Hz, 1,611 Hz, 1,758 Hz
Resistivity	Test method	Wenner and Schlumberger with automatic calculation	
	Range	0.01 to 99.9 kΩ	
	Measurement frequency	41 to 128 Hz	
DC resistance measurement	Type of measurement	2 wires or 4 wires	
	Range	0,12 Ω à 99,9 kΩ	0,001 Ω à 99,9 kΩ
	Measurement current	> 200 mA DC	
Memory		512 memory locations	
Communication		optical / USB link	
Dimensions / weight		272 x 250 x 128 mm / 3 kg	
Electrical safety		50 V CAT IV	

STATE AT DELIVERY

• C.A 6470N P01126506

Delivered with 1 external mains charger, data export software + optical / USB communication lead, 5 operating manuals (one per language) on CD-ROM, 5 simplified operating manuals, each in a different language, 5 descriptive labels, each in a different language

• C.A 6471 ..... P01126505

Delivered with 1 external mains charger, data export software + optical / USB communication lead, 2 C182 clamps with 2 safety leads, 5 operating manuals (one per language) on CD-ROM, 5 simplified operating manuals, each in a different language, 5 descriptive labels, each in a different language, 1 carrying bag.

ACCESSORIES / SPARES

- **Adapter for battery recharging on vehicle cigarette lighter P01102036**
- **GB mains power cable P01295253**
- **Set of 10 fuses: type F 0.63 A – 250 V – 5x20 mm – 1.5 kA..... AT0094**
- **Adapter for battery recharging from mains P01102035**
- **Battery pack..... P01296021**
- **Optical / RS communication cable P01295252**
- **Optical / USB communication cable HX0056-Z**
- **Earth kit for 3P method, 50 m P01102021**
  Comprising 2 T-shaped rods, 2 reels of cable (50 m red, 50 m blue), 1 cable winder (10 m green), 1 mallet, 5 spade lug / Ø 4 mm banana plug adapters, 1 carrying bag
- **Earth kit for 3P method, 100 m P01102022**
  Comprising 2 T-shaped rods, 2 reels of cable (100 m red, 100 m blue), 1 cable winder (10 m green), 1 mallet, 5 spade lug / Ø 4 mm banana plug adapters, 1 carrying bag
- **Earth kit for 3P method, 150 m P01102023**
  Comprising 2 T-shaped rods, 2 reels of cable (150 m red, 150 m blue), 1 cable winder (10 m green), 1 mallet, 5 spade lug / Ø 4 mm banana plug adapters, 1 carrying bag
- **Earth and resistivity kit, 100 m P01102024**
  Comprising 4 T-shaped rods, 4 reels of cable (100 m red, 100 m blue, 100 m green, 30 m black), 1 cable winder (10 m green), 1 mallet, 5 spade lug / Ø 4 mm banana plug adapters, 1 prestige carrying bag with specially-designed compartment for the C.A 647x.
- **Earth and resistivity kit, 150 m P01102025**
  Comprising 4 T-shaped rods, 4 reels of cable (150 m red, 150 m blue, 100 m green, 30 m black), 1 cable winder (10 m green), 1 mallet, 5 spade lug / Ø 4 mm banana plug adapters, 1 prestige carrying bag with specially-designed compartment for the C.A 647x.
- **Additional resistivity kit (100 m) P01102030**
  (standard carrying bag containing 2 reels of cable (100 m green, 30 m black) and 2 T-rods)
- **C.A647X continuity kit** *(mΩ position)* **..... P01102037**
  Comprising 4 cables 1.5 m long terminated by Ø 4 mm banana plugs, 4 crocodile clips, 2 test probes, DC / DC adapter + 5 m connection cable for vehicle cigarette lighter.
- **DataView PC software P01102058**

FOR THE C.A 6471 ONLY

- **MN82 clamp (diam. 20 mm)**
  (delivered with 1 cable 2 m long for ES terminal connection) **..... P01120452**
- **C182 terminal (diam. 20 mm)**
  (delivered with 1 cable 2 m long for ES terminal connection) **..... P01120333**

For assistance and ordering

AthanA • 906211178 - Ed.1 - 09/2008 - Non contractual document. Confirm specifications before ordering.

FRANCE
Chauvin Arnoux
190, rue Championnet
75876 PARIS Cedex 18
Tél : (33) 01 44 85 44 85
Fax : (33) 01 46 27 73 89
info@chauvin-arnoux.com
www.chauvin-arnoux.com

UNITED KINGDOM
Chauvin Arnoux Ltd
Waldeck House - Waldeck Road
MAIDENHEAD SL6 8BR
Tel: +44 1628 788 888
Fax: +44 1628 628 099
info@chauvin-arnoux.co.uk
www.chauvin-arnoux.co.uk

MIDDLE EAST
Chauvin Arnoux Middle East
P.O. BOX 60-154
1241 2020 JAL EL DIB (BEIRUT)
Tel: +961 1 890 425
Fax: +961 1 890 424
camie@chauvin-arnoux.com
www.chauvin-arnoux.com

CHAUVIN ARNOUX GROUP

TECHNICAL SPECIFICATIONS:

MEASUREMENT CHARACTERISTICS

- Measurement from 0 to 2000 Ω within three automatic ranges

Measurement range	Resolution	Test current	Accuracy
0.00…19.99 Ω	0.01 Ω	10mA	±2% ±1pt
20.00…199.9 Ω	0.1 Ω	1mA	±2% ±1pt
200.0…1999 Ω	1 Ω	0.1mA	±2% ±3pt

- Measurement frequency: 128 Hz
- Open circuit voltage ≤ 42 V peak
- Conditions for use: -10…55 °C / 20…90% RH
- Response time: between 4 and 8 seconds depending on measurement conditions

OTHER FEATURES

- Power supply

C.A 6460	C.A 6462
8 alkaline 1.5 V LR14 batteries or same-size rechargeable NiMH or NiCd storage batteries	Rechargeable NiMH battery (life: 6 h for a load at 80%)

- Average charge life under permanent control

C.A 6460	C.A 6462
4,500 measurements of 15 s	1,180 measurements of 15 s

- Watertight IP 53 case
- Dimensions: 273 x 247 x 127 mm
- Weight: about 2.8 kg (C.A 6460) and about 3.3 kg (C.A 6462)

COMPLIANCE TO STANDARDS

- Electric safety: double insulation device, according to NF EN 61010 / IEC 61557
- EMC: EN 61 000-3, EN 61 000-4

TO ORDER

C.A 6460	C.A 6462
delivered with batteries and user's manual in 5 languages	delivered with 2 m European-type mains supply lead and user's manual in 5 languages
P01.1265.01	**P01.1265.02**

ACCESSORIES:

Standard Earth / Resistivity Kit
P01.1018.23
Shoulder bag with
4 straight rods,
2 extractors,
2 reels (30 m of red cord, 30 m of blue cord),
3 m of green cord,
3 m of black cord
and 1 hammer.

Prestige Earth / Resistivity Kit
P01.1018.25
Compartmentalized rigid bag with space for the tester, including 4 T-rods,
4 reels (100 m of red cord, 60 m of blue cord,
10 m of green cord
and 20 m of black cord)
and a hammer.

REPLACEMENT PARTS:

1.5V alkaline LR14 battery (pack of 2)	P01.2960.27
9.6V – 3.5 AH NIMH storage battery	P01.2960.21
European mains lead	P01.2961.74
HPC 0.1A fuse (pack of 10)	P01.2970.12

CE

TEST & MEASUREMENT DIVISION

906 211 048 - Ed1 - 04/02 - Characteristics subject to modifications according to technological developments.

France
190, rue Championnet
75876 PARIS CEDEX 18
Tel: +33 1 44 85 44 86
Fax: +33 1 46 27 95 59
e-mail: export@chauvin-arnoux.fr
www.chauvin-arnoux.fr

UNITED KINGDOM
Waldeck House - Waldeck Road
MAIDENHEAD SL6 8BR
Tel: 01628 788 888
Fax: 01628 628 099
e-mail: info@chauvin-arnoux.co.uk
www.chauvin-arnoux.co.uk

CHAUVIN ARNOUX

Expertise for Earths

C.A 6460
C.A 6462

Earth and Resistivity Testers

Ground, earth electrode and coupling measurement using traditional rod methods

- **3 testers in one:** resistivity, earth, coupling
- **Validation of measurement through automatic check:** 3 lights indicate the presence of faults liable to impair measurement results
- **Heavy-duty on-site case** with cover for use on difficult grounds
- **Large LCD display with backlighting**

CHAUVIN ARNOUX

Robust and watertight, the C.A 6460 and C.A 6462 are easy-to-use instruments designed specially for use in the field. Wherever you need to install an electric ground connection or certify an existing one, the C.A 6460 and C.A 6462 help you perform accurate, reliable and quick diagnosis while providing the friendliest and safest test environment.

COMPLETE AND WELL-DESIGNED TOOLS

Using the conventional rod-based method, the C.A 6460 and C.A 6462 measure resistivity ("4-wire" connections), ground resistances ("3-wire" connections) and coupling between electrically independent earth electrodes ("4-wire" connections).

They are equipped with 4 color-coded terminals for easy connection and a captive bar for changing from a 4-wire to a 3-wire measurement very quickly and easily.

Plus, the C.A 6462 is fitted with a rechargeable battery with an internal charger.

MEASUREMENT AND ERROR DIAGNOSIS

Once the rods have been installed and connected (named E, ES, S and H), begin measurement by simply pressing the push-button. For maximum accuracy, the range and current selection is carried out automatically.

The measurement result and its unity are read directly on the large, backlit digital screen.
Three lights indicate any defect or interference liable to impair measurement results:

- red flashing FAULT LED (E-H): indicates a fault in the current circuit (voltage at terminals ≥ 30 V peak)
- red flashing HIGH RESISTANCE LED (ES-S): voltage circuit resistance too high (R ≥ 50kΩ)
- red flashing HIGH NOISE LED (ES-S): voltage circuit noise ≥ 13 V peak

VERY SAFE TO USE

When it comes to safety, the C.A 6460 and C.A 6462 meet the strictest of standards.

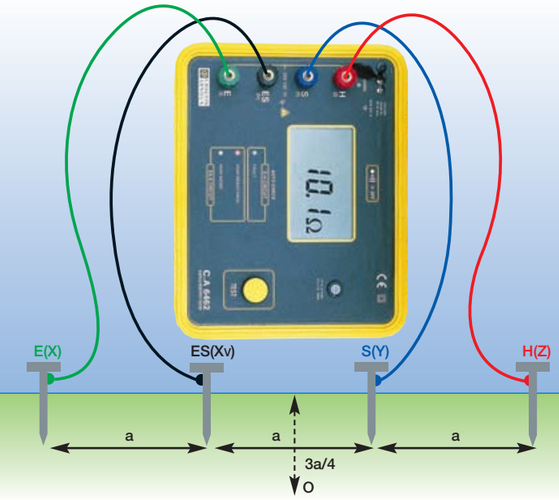
These instruments are very suitable to severe environments: parasitic voltages, high telluric currents, highly resistive auxiliary connections, etc.

Mains supply socket with dust cover (C.A 6462)
4 connecting terminals named E (X), ES (Xv), S (Y) and H (Z) for banana plugs or forked lugs
Fuse holder
Large backlit LCD display: digital display of measured value with its unity
Momentary-control push-button for turning the instrument on and beginning measurements: as soon as the button is released, the instrument turns itself off.
3 lights indicate those events liable to impair measurement results
10.1Ω
C.A 6462
TEST

USE / APPLICATIONS:

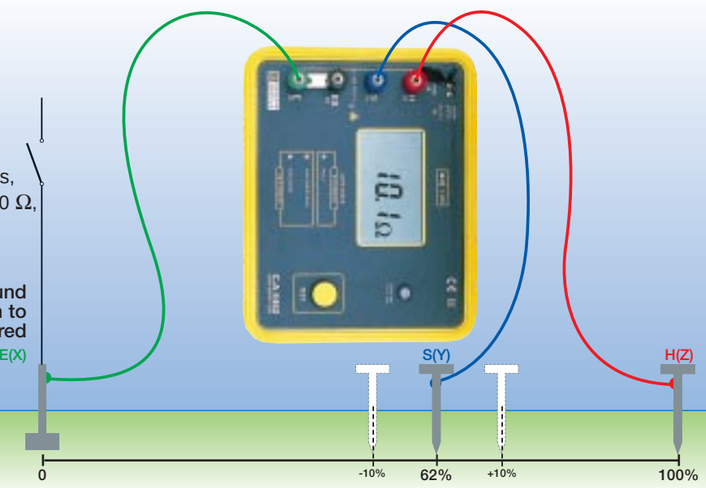
Ground resistivity measurement with the "Wenner method" (4-rod method)

Depending on the soil's properties, this measurement defines the best positions, depth and geometry necessary for installing electric ground connections.



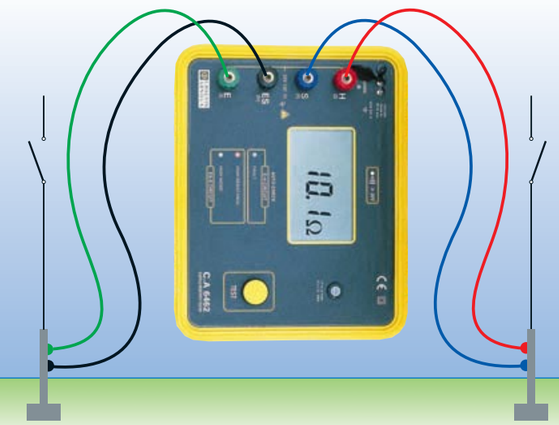
Ground connection resistance measurement with the "TAGG method" (62% method)

This method, using 2 auxiliary rods, measures up to 2000 Ω, even in worst-case conditions.



Coupling measurement between two earths

4-wire measurements are considered better than 2-wire because they free you from cord resistance, which is often too high.



CHAUVIN® ARNOUX
CHAUVIN ARNOUX GROUP

C.A 6472
C.A 6474

Reliable, accurate and quick for comprehensive earth testing

Earth and resistivity tester

Adapter for pylon earth measurements

MULTI-FUNCTION

- All types of earth resistance measurements: and earth measurement on pylons (C.A. 6474 option)
- Resistivity (Wenner and Schlumberger methods)
- Earth coupling
- Ground potential measurement
- Continuity / resistance

HIGH PERFORMANCE

- Possibility of analysing the frequency behaviour of earthing systems (41 Hz to 5 kHz)
- Wide measurement range for optimum resolution
- Rejection of interference voltages up to 60 Vpeak
- Automatic calculation of the earth coupling coefficient and ground resistivity
- Measurement and analysis of pylon earthing
- Recording of results

A versatile instrument

The C.A 6472 earth and resistivity tester can be used for quick, comprehensive testing of all earthing systems by gathering all the earth measurement functions in a single instrument. When used with the C.A 6474, it also offers pylon earth measurements, making it an essential tool for diagnosing and maintaining the earthing systems of all types of pylons.

New measurement concept

Unlike traditional earth testers, the C.A 6472 offers the possibility of analysing the frequency behaviour of earthing systems thanks to its particularly extensive measurement frequency range (from 41 to 5,078 Hz). The use of a high-frequency measurement signal makes it possible to assess the behaviour of an earthing system in the event of lightning.

2 operating modes for easy learning

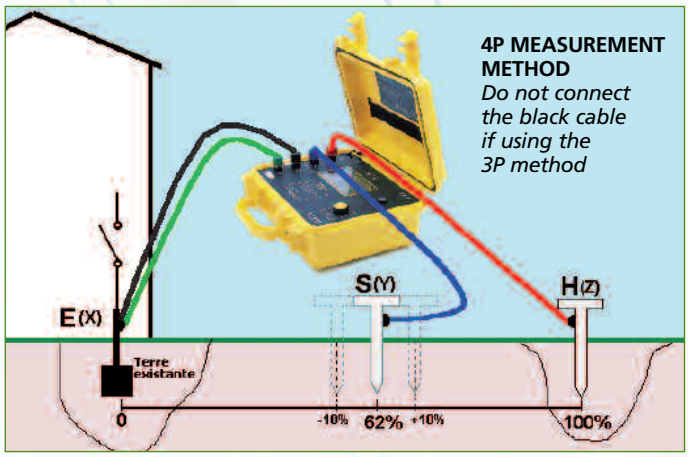
Automatic mode:
A single key for simple handling:

- function selection by rotary switch
- press on START / STOP button
- reading of the result

In this mode, the instrument carries out a default measurement at 128 Hz and chooses the most appropriate frequency in the event of interference voltages.

Expert mode:
Users can choose the required measurement parameters (specific measurement frequency, frequency scan, measurement voltage between H and S, etc.) and can access additional measurement results for more accurate interpretation.

Automatic recognition of input connections:
the connections are displayed and flash if incorrect or absent.



4P MEASUREMENT METHOD
Do not connect the black cable if using the 3P method

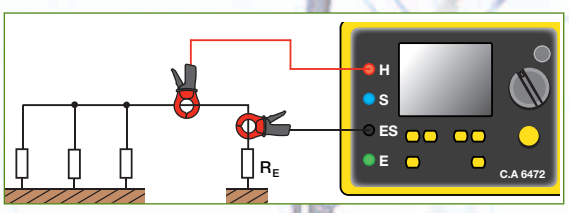
3P EARTH MEASUREMENT METHOD

The 3P method is the traditional method using rods to measure the resistance of an existing earth connection. The C.A 6472 can also be used to measure the resistances of the auxiliary rods RS and RH, as well as any interference voltages, thus allowing more accurate interpretation of the measurement.
Suitable for all types of measurement environments, even the most difficult, it guarantees measurement of auxiliary rod resistances up to 100 kø and interference voltages up to 60 Vpeak.

4P AND 4P SELECTIVE MEASUREMENT

The 4P measurement method is particularly well-suited to measuring very low earth resistance values.
In the event of several resistances set up in parallel, it is possible to combine this method with a clamp-on ammeter in order to carry out selective measurements. This "4P selective" method saves considerable time as it is no longer necessary to disconnect the earth resistance to be measured. Indeed, the clamp enables measurement of the current through the earth connection to be tested, thus avoiding the influence of the parallel earth connections.

EARTH LOOP MEASUREMENT WITH 2 CLAMPS

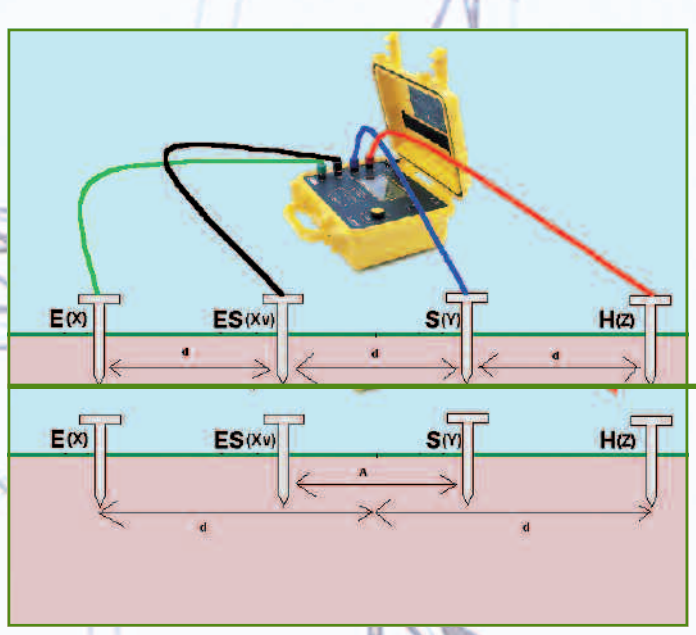


In the event of a system with parallel earth connections, the C.A 6472 is capable of accurately measuring an earth resistance using clamps only. The principle of this method involves placing 2 clamps around the earth conductor to be tested and connecting them each to the instrument. One clamp injects a known signal (32 V / 1367 Hz) while the other clamp measures the current circulating in the loop.
This method saves considerable time when earth testing because it is no longer necessary to set up auxiliary rods or to disconnect the earth connections.

EARTH COUPLING MEASUREMENT

The operator performs 3 successive measurements (2 traditional earth measurements using the 3P method – R_1 & R_2 – and 1 earth measurement using the 2P method – R_{1-2}). The C.A 6472 then automatically calculates the coupling resistance: $Rc = (R_1 + R_2 - R_{1-2}) / 2$.

GROUND RESISTIVITY MEASUREMENT



Wenner method:
the distances between the 4 rods are identical:
$d\ \rho W = 2.\pi.d.R_{s\text{-}SE}$

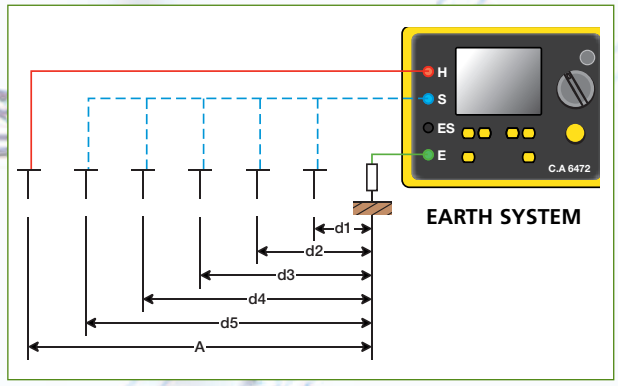
Schlumberger method:
the distance between the 2 central rods S & ES is A
the distance between the 2 outside rods E & H is 2d
$\rho S = (\pi.(d^2\text{-}A^2/4).R_{s\text{-}SE})\ /4$

When it is possible to choose the position of the earth connection, resistivity measurement helps to assess the ground and thus determine the place where the earth resistance will be lowest (optimization of construction costs).

The C.A 6472 automatically calculates the resistivity of the ground (ρ) using the Wenner or Schlumberger method, as soon as the distances used between the rods have been entered. The resistances of the rods R_E, R_{ES}, R_S and R_H can also be measured.

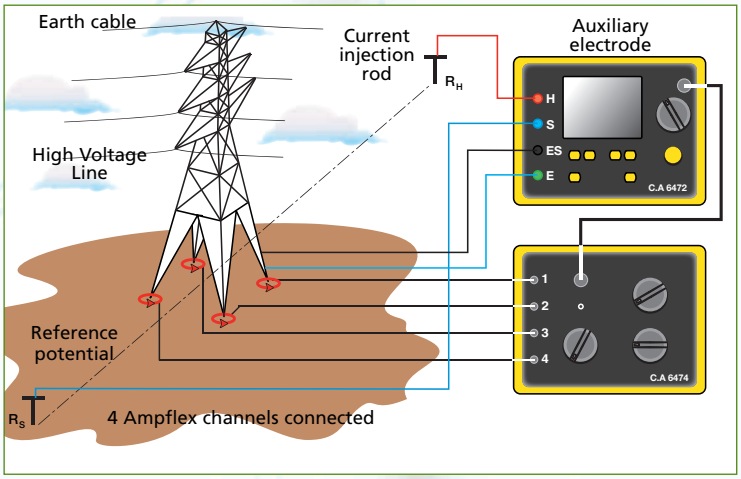
GROUND POTENTIAL MEASUREMENT

This measurement can be used to determine the value of the potential as a function of distance. By performing several measurements with different distances (d), it is thus possible to track the change in potential around an earthing system.



EARTH MEASUREMENT ON PYLONS WITH EARTH CABLE

High-voltage lines are usually equipped with an earth cable to allow lightning to discharge to earth via the pylons. As all the pylons are connected to this conductor, all the pylons' earth resistances are in parallel. This means that it is impossible to measure pylon resistance using traditional 3P methods unless the earth cable is disconnected, which is a dangerous and time-consuming operation.



Used in conjunction with the C.A 6474 vectorial processing unit, the C.A 6472 offers the possibility of measuring a pylon's earth resistance even if it is part of a parallel earth network, by selective measurement of the pylon in question.

With 4 current sensors (Ampflex) positioned around the footings of the pylon and a frequency scan up to 5 kHz, it is possible to measure the earth impedance of the pylon precisely and selectively.

Furthermore, the use of flexible sensors means that this concept can be adapted to any pylon geometry.

A single measurement is sufficient to acquire all the essential quantities:

– overall earth resistance of the line
– resistance of the pylon under consideration
– resistance of each pylon footing
– resistance of the earth cable between pylons

ELECTRICAL SPECIFICATIONS

	3P method	4P / 4P selective method	Earth measurement with 2 clamps	Resistivity	Earth potential measurement	DC resistance measurement	Measurements with C.A 6474
Range	0.01 Ω to 99.9 kΩ	0.001 Ω to 99.99 Ω	0.01 Ω to 500 Ω	0.01 kΩ to 99.9 kΩ	0.01 mV to 65.00 V	0.001 Ω to 99.9 kΩ	0.001 Ω to 99.99 kΩ
Resolution	0.01 to 100 Ω	0.001 to 10 Ω	0.01 to 1 Ω	0.01 to 100 Ω	0.01 mV to 10 mV	2 wires: 0.01 Ω to 100 Ω/ 4 wires: 0.001 Ω to 10 Ω	0.001 to 10 Ω
Accuracy	± (2% + 1 count)	± (2% + 1 count)	± (10% + 1 count)	± (2% + 1 count)	± (5% + 1 count)	± (2% + 2 counts)	± (5% + 1count)
No-load voltage	16 or 32Vrms	16 or 32 Vrms	16 or 32 Vrms	16 or 32Vrms	16 or 32 Vrms	±16 VDC	16 or 32 Vrms
Measurement frequency	41 to 5,078 Hz	41 to 5,078 Hz	Auto: 1,367 Hz Manual: 1,367 Hz, 1,611 Hz, 1,758 Hz	41 to 128 Hz	41 to 128 Hz	DC	41 to 5078 Hz
Coupling measurement	yes	–	–	–	–	–	–
Auxiliary rod resistance measurement	0.1 Ω to 100 kΩ	0.01 Ω to 100 kΩ	–	–	–	–	0.01 Ω to 100 kΩ
$U_{interference}$	maximum 60 Vpeak					–	maximum 60 Vpeak
Test method	–	–	–	Wenner and Schlumberger with automatic calculation	–	–	–
Type of measurement	3 wires	4 wires	–	4 wires	3 wires	2 wires or 4 wires	–
Measurement current	–	–	–	–	–	> 200 mA DC	–

MECHANICAL SPECIFICATIONS

Memory/Communication	512-record memory / optical link/USB
Dimensions / weight	272x250x128 mm / C.A 6472: 3.2 kg / C.A 6474: 2.3 kg
Protection rating	IP 53
Electrical safety	CAT IV 50 V, complies with IEC 61326-1 / IEC 61010 / IEC 61557-1-4-5

STATE OF DELIVERY

- **C.A 6472 earth and resistivity tester P01.1265.04**

Delivered with: mains adapter + 2-pole mains cable for recharging the battery from the mains supply, one operating manual in 5 languages on CD-ROM, 5 simplified operating manuals and 5 specific labels, each in a different language.
Data export software + USB/optical communication cable and two C182 clamps

- **C.A 6474 adapter for pylon earth measurement** (PYLON BOX) **..... P01.1265.10**

Delivered with a carrying bag for accessories containing: One C.A 6472 – C.A 6474 connection lead, 6 BNC / BNC cables 15 m long, 4 AmpFLEX flexible current sensors 5 m long, 1 set of 12 AmpFLEX identification rings, 2 cables (5 m green, 5 m black) with safety connectors on winder, 5 spade lug/banana plug converters Ø 4 mm, 3 clamps, 1 calibration loop, 5 operating manuals and 5 specific labels, each in a different language.

ACCESSORIES

- **100 m earth and resistivity kit P01.1020.24**
- **150 m earth and resistivity kit P01.1020.25**
- **C.A 647X continuity kit** (mΩ position) **..... P01.1020.37**
- **MN82 CLAMP** (Ø 20 mm) for C.A 6474 **..... P01.1204.52**
- **Adapter for battery charging on cigarette lighter P01.1020.36**
- **DataView® PC software..... P01.1020.06**
- **Optical / RS232 communication cable..... P01.2952.52**

For assistance and ordering

FRANCE
Chauvin Arnoux
190, rue Championnet
75876 PARIS Cedex 18
Tel: +33 1 44 85 44 86
Fax: +33 1 46 27 95 59
export@chauvin-arnoux.fr
www.chauvin-arnoux.fr

UNITED KINGDOM
Chauvin Arnoux Ltd
Waldeck House - Waldeck Road
MAIDENHEAD SL6 8BR
Tel: +44 1628 788 888
Fax: +44 1628 628 099
info@chauvin-arnoux.co.uk
www.chauvin-arnoux.co.uk

MIDDLE EAST
Chauvin Arnoux Middle East
P.O. BOX 60-154
1241 2020 JAL EL DIB (Beirut) - LEBANON
Tel: +961 1 890 425
Fax: +961 1 890 424
camie@chauvin-arnoux.com
www.chauvin-arnoux.com

CHAUVIN ARNOUX GROUP

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Quick checking of earth loops

C.A 6410
C.A 6412
C.A 6415

EARTH CLAMPS

Ω mA

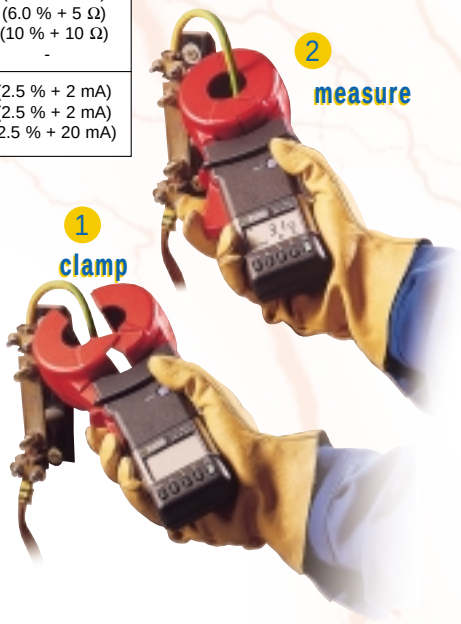
CE

CHAUVIN ARNOUX

An active element in electrical protection, the earthing is usually made up of several links to the equipotential surface (surface of the earth), thus forming multiple loops. To complement the traditional continuity and earth measurements, clamp-on earth resistance testers offer the advantage of quick earth testing in total safety (the electrical installation remains connected to earth, even during the test). Clamps C.A 6412 and C.A 6415 can also be used to measure the leakage currents flowing to the ground. To further optimize your testing operations, the C.A 6415 model also has an alarm function (buzzer if threshold is exceeded) and a measurement logging function.

	Range (1)	Resolution	Accuracy (2)
Resistance measurement	0.10 to 1.00 Ω 1.0 to 50.0 Ω 50.0 to 100.0 Ω 100 to 200 Ω 200 to 400 Ω 400 to 600 Ω 600 to 1200 Ω	0.01 Ω 0.1 Ω 0.5 Ω 1 Ω 5 Ω 10 Ω 50 Ω	± (2 % + 0.02 Ω) ± (1.5 % + 0.1 Ω) ± (2.0 % + 0.5 Ω) ± (3.0 % + 1 Ω) ± (6.0 % + 5 Ω) ± (10 % + 10 Ω) -
RMS current measurement (3)	1 to 300 mA 0.300 A to 3.000 A 3.00 A to 30.00 A	1 mA 1 mA 10 mA	± (2.5 % + 2 mA) ± (2.5 % + 2 mA) ± (2.5 % + 20 mA)

(1) Automatic range change
(2) In the reference conditions
(3) Additional function available on models C.A 6412 and C.A 6415



General specifications

- Clamping diameter: 32 mm
- Temperature of use: -10 to +55 °C
- Storage temperature: -30 to +70 °C
- Relative humidity: 0 to 75% RH
- IP 30 as per EN 60529
- Dimensions : 235 x 100 x 55 mm
- Model C.A 6415:
  Alarm threshold adjustable from 1 to 199 Ω
  Memory capacity: 99 measurements.

Electrical specifications

- Complies with EN 61010-2-032
- Dual insulation, class 2
- 150 V, cat. III, pollution level 2
- Max. overcurrent: 100 A AC constant
- Measurement frequency: 2400 Hz
- Charge life: with 9 V alkaline battery (Cd/Ni battery accepted):
  1500 thirty-second measurements

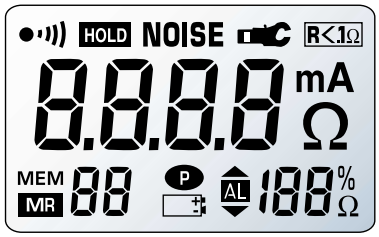
To order

- **C.A 6410** P01.**1220.11**
- **C.A 6412** P01.**1220.12**
- **C.A 6415** P01.**1220.13**

Each clamp-on earth resistance tester is delivered in a carrying case with one 9 V battery and a user's manual.

- Calibration loop
  CL1 . . . . . .P01.**1223.01**

Your distributor



Models C.A 6410, 6412 and 6415

- Ω — Resistance measurement
- R<1Ω — Resistance under 0.1 Ω
- Remaining battery charge life
- Battery indicator
- P — Automatic shutdown inhibited
- HOLD — Holding of display
- Buzzers active
- NOISE — Significant eddy currents
- Jaws not closed properly

Models C.A 6412 and 6415

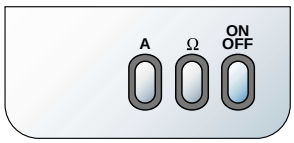
- mA — Current measurement

Model C.A 6415

- Alarm function
- MEM — Recording in memory
- MR — Reading memory

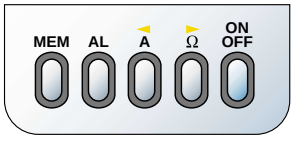
Model C.A 6410

ON OFF — Start Ω / stop + autotest



Model C.A 6412

ON OFF — Start / stop + autotest
Ω — Resistance measurement
A — Current measurement



Model C.A 6415

ON OFF — Start / stop + autotest
Ω — Resistance measurement
A — Current measurement
MEM — Recording of measurement
AL — Alarm activation and adjustment

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TEST & MEASUREMENT DIVISION

FRANCE
190, rue Championnet
75876 PARIS Cedex 18
Tél : (33) 01 44 85 44 86
Fax : (33) 01 46 27 95 59
e-mail : info@chauvin-arnoux.com
www.chauvin-arnoux.com

UNITED KINGDOM
Waldeck House - Waldeck Road
MAIDENHEAD SL6 8BR
Tel : 01628 788 888
Fax : 01628 628 099
e-mail : chauvin-arnoux@compuserve.com
www.chauvin-arnoux.com

CHAUVIN ARNOUX

Test the quality of your earths

Self-contained, leakproof and reliable, with a highly-readable display, the C.A digital earth tester accurately measures the resistance of earths. Lightweight and easy to use, this site instrument is specifically designed for use in the field.

- earth resistance: 0.00 to 2,000Ω (3 cal.)
- 3 fault presence indicators to validate the measurement
- measurement frequency: 128Hz
- connection of rods to colour-coded terminals
- a removable captive connection strip between H and S for measurement of 2-wire resistance
- large 2,000-count digital display with 18mm digits: excellent readability
- protection by an HRC fuse
- power supply: 8 x 1.5V batteries for average charge life of 1,800 measurements of 15 seconds each
- measurements in compliance with IEC 1010, IEC 61557, VDE 0413 and BS 7671
- electrical safety: IEC 1010 and IEC 61557
- dimensions: 238 x 136 x 150mm - weight: 1.3 kg